

A TESTING DEVICE

FIELD OF THE INVENTION

The present invention is related to a testing device, particularly to a testing
5 device for testing peripheral devices provided with USB interface.

BACKGROUND OF THE INVENTION

In current computer system, USB interface is used frequently and widely,
mostly in the usage of computer peripheral devices. As a result, when peripheral
devices with USB interface are produced in factories, they have to be tested before
10 shipping.

Recently, the method of testing the peripheral devices with USB interface
uses a personal computer installed with a USB control card for testing. Figure 1 is
a block diagram of conventional testing peripheral devices with USB interface. As
shown in figure 1, a computer 10 is installed with a USB interface control card 12.
15 Besides, peripheral devices 14 & 16 to be tested are connected to the USB
interface control card 12. The peripheral devices 14 & 16 could be different kinds
of peripheral devices with USB interface such as a mouse, a printer, a digital
camera, a memory stick, etc.

After installing driver in computer 10, the peripheral devices 14 & 16 are
20 tested by testing software to confirm whether they work or not. If the computer
determines that it fails, the testing will not pass. By this way, the purpose of test is
distinguishing whether the peripheral devices are ready for shipping or not.

However, the testing procedure requires at least one personal computer
installed with related driver and testing program, which can not meet the need of
25 low cost and high efficiency nowadays.

Therefore, for eliminating the deficiencies of the conventional testing peripheral devices with USB interface and the problems caused during the use of the testing device and for providing a solution by designing a structure which uses resource effectively to reduce the cost of equipment and to simplify the test procedure to increase test efficiency have been expected by users for a long time. The present invention is designed based on the inventor's experience in researching, developing and selling for years. Finally, the testing device of the present invention is designed after several times of designing, discussing, sampling and improvement to solve the above-mentioned problems.

10 SUMMARY OF THE INVENTION

It is therefore a primary object of the present invention is to provide a testing device that uses only one CPU connected with peripheral devices to be tested through a USB control chip, which is used in testing the peripheral devices, to achieve the purposes of reducing the cost and simplifying the testing procedure.

15 According to the present invention, a testing device is provided including a CPU, a memory, and a control chip. The memory is provided with a predetermined firmware program inside and connected to the CPU. A control chip for controlling USB interface is connected to the CPU and provided with a plurality of connecting ports for connecting with peripheral devices to be tested.
20 The firmware program inside the memory is used for controlling CPU to test the peripheral devices to be tested through the control chipset.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a block diagram of conventional testing peripheral devices with USB interface;
25

Figure 2 is a block diagram of the testing device according to a preferred embodiment of the present invention; and

Figure 3 is a flow chart of the testing device according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

5 The structural features and the effects to be achieved may further be understood and appreciated by reference to the presently preferred embodiments together with the detailed description.

10 Figures 2 & figure 3 are respectively a block diagram of a testing device and a test flow chart of a preferred embodiment of the present invention. As shown in figures, a testing device 20 includes a CPU 24, a control chip 26, a memory 22 and a plurality of peripheral devices A 21, B 23 and Z 25 to be tested. The control chip 26 is used for controlling USB interface. The memory 22 is used for storing programs and data and connected to the CPU 24 to be accessed by the CPU 24. The peripheral devices A 21, B 23 and Z 25 to be tested are connected to the control chip 26. Each peripheral device is provided with USB interface so that the CPU 24 could test each peripheral device through the control chip 26.

15 The memory 22 has a predetermined test packet and a firmware program to provide the CPU 24 a testing procedure. As shown in step 300, according to the firmware program the CPU 24 sends out a test packet through the control chip 26 to each peripheral device, such as the peripheral devices A 21, B 23 and Z 25 shown in figure 2. After receiving the test packet, each peripheral device will send the test packet back to the CPU 24 through control chip 26, as shown in step 310. Finally, the CPU 24 will determine whether the test packet is the same as the predetermined test packet stored in the memory 22, as shown in step 320. If they are the same, it indicates the peripheral device is a workable product for shipping, as shown in step 322. Otherwise, the product is withdrawn from shipping as shown in step 324.

Thus, the simple circuit structure of the present invention is used for testing each peripheral device while reducing the cost effectively. A plurality of peripheral devices could be tested at one time, to fulfill the purposes of simplifying the procedure and increasing efficiency in the meantime.

30 As a conclusion, the present invention is related to a testing device that only uses one CPU to connect to the peripheral devices to be tested through a USB

control chip, in order to achieve the purposes of reducing the cost and simplifying the testing procedure during test.

5 The foregoing descriptions of specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with
10 various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

LIST OF REFERENCE SYMBOLS

- 10. computer
- 12 USB interface control card
- 14 peripheral device
- 5 16 peripheral device
- 20 testing device
- 21 peripheral devices A
- 22 memory
- 23 peripheral devices B
- 10 24 CPU
- 25 peripheral devices Z
- 26 control chip